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ABSTRACT

A program was developed using computer-assisted instruction to enable gifted primary-level students to learn the basic elements of note reading in the treble clef at individual speeds and without stress of competition. The target group was selected from students enrolled in beginning and advanced ukulele classes. The computer-assisted instruction included identification of the music staff, note reading on the treble clef, identification of ledger lines, identification of the music alphabet, word spelling using the music alphabet, and practice in decoding a message using the musical alphabet in combination with the English alphabet. Students applied note-reading skills by preparing and performing a recital piece. All seven of the participants scored at least 80% on a post-test, and all seven of the students were successful in preparing and presenting a recital piece. Appendices contain a list of characteristics of gifted students, a ukulele contract, pre/post-test, form for student evaluation of the program, project outline, documentation for the computer software used, and excerpts from student journals. (Eight references.) (JDD)

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COMPUTER-ASSISTED INSTRUCTION IN TREBLE CLEF NOTE READING FOR GIFTED, PRIMARY STUDENTS

by

PATRICIA D. CRAIG

A Practicum Report
submitted to the Faculty of the Center for the Advancement of Education at Nova University in partial fulfillment of the requirements for the degree of Master of Science.

The abstract of this report may be placed in the School Practices Information Files for reference.

January 1988

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Authorship Statement

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of other workers in the field and in the hope that my work, presented here, will earn similar respect.

Patricia D. Craig

Patricia D. Craig

Abstract

Computer-Assisted Instruction in Treble Clef Note Reading for Gifted, Primary Students.
Craig, Patricia D., 1987: Practicum Report Nova University Center for the Advancement of Education.
Descriptors: Academically Gifted, Aesthetic Education, Computer-Assisted Instruction, Music Education, Music Reading, Primary Education

This practicum addresses the need of gifted, primary students to expand individual music knowledge and potential beyond that which is offered in general music classes. Computer-assisted instruction was developed for student use during regular school hours. Computer-assisted instruction allowed gifted students to learn the basic elements of note reading in the treble clef at individual speeds and without stress of competition. Students applied note-reading skills gained from computer-assisted instruction by preparing and performing a recital piece using school and personally-owned instruments. It was possible for participants to complete this entire project during school hours with minimum teacher direction.

The target group was selected from gifted, primary students enrolled in beginning and advanced ukulele classes. Completion and mastery of the objectives and a program evaluation measured the effectiveness of this project. Student mastery of the objectives was measured through a comparison of pretest and posttest instruments. Four of the seven participants scored 90 percent on the posttest with the remaining three students scoring 80 percent. Results showed that all seven of the gifted, ukulele students were successful in preparing and presenting a recital piece. An evaluation completed by participating students, as well as comments made during the implementation of the project, indicated that primary, gifted students need more extensive music study than that which is currently offered in the school's general music curriculum.

TABLE OF CONTENTS

PAGE

TITLE PAGE..... i

AUTHORSHIP STATEMENT..... ii

ABSTRACT..... iii

TABLE OF CONTENTS..... iv

OBSERVER'S VERIFICATION..... v

CHAPTER

1. PURPOSE..... 1

2. RESEARCH & SOLUTION STRATEGY..... 14

3. METHODOLOGY..... 22

4. RESULTS..... 28

5. RECOMMENDATIONS..... 34

REFERENCE LIST..... 36

APPENDICES

APPENDIX A: Characteristics of Gifted Students..... 37

APPENDIX B: Ukulele Contract..... 38

APPENDIX C: Ukulele Student Update..... 39

APPENDIX D: Pre-Posttest..... 40

APPENDIX E: Student Evaluation of the Program..... 42

APPENDIX F: Project Outline..... 43

APPENDIX G: Documentation of Computer-Assisted Instruction in Treble Clef Note Reading..... 44

APPENDIX H: Excerpts from Student Journals.. 53

Chapter I

Purpose

1.1 Background

Located on a 26-acre site, this rural primary school serves children in kindergarten through third grade. Since its opening in 1962, a media center, 11 new classrooms, and an administrative suite have been added. Through the years there have been several modifications of the original plan of the school to serve grades one through six. In 1968, kindergarten was introduced into public education and in order to accommodate the incoming kindergarten students, the sixth graders attending the school joined grades seven and eight to form a middle school. The school continued to serve kindergarten through grade five students until 1971 when the "cluster schools" concept developed to adhere to court-ordered desegregation. This resulted in the school becoming a primary school serving kindergarten through second grade students. In 1983, a new elementary school was opened to serve the growing population of the area. Students in fourth through sixth grade would attend the original elementary school, the new school would offer classes

for students in kindergarten through sixth grade, and the target school would serve students in kindergarten through third grade. It can be seen from the above-cited history that the school has experienced many changes in student population. The total student population of the targeted school is 606 with 459 White students, 136 Black students, ten Mexican-American students, and one Chinese-American student enrolled. Eleven buses transport students from five surrounding areas, one as far as fifteen miles to the south of the school.

Most of the parents of students attending the target school are employed in the local phosphate mining industry. Over the past five years, the mining industry has suffered many temporary "shutdowns" causing employees to seek other employment or wait until mining operations begin again. Two large corporations have permanently closed. These two factors have caused families in this community to suffer financial loss which results in approximately 280 students receiving free or reduced lunch and other federal subsidies. The overall economic

characteristic of the school would appear to be lower-middle.

The staff for the 1987-88 school year includes: 24 classroom teachers, a media specialist, music teacher, physical education teacher, guidance counselor, primary specialist, speech, vision, and hearing specialists, as well as a teacher for varying exceptionalities. The identified thirteen academically accelerated students are bused to a learning resource center one day a week.

First through third grade classrooms are equipped with Commodore computers. For two years prior to the current school year, the school provided a computer laboratory where students received weekly instruction in computer literacy and use of educational software. Funds were not budgeted for maintenance of a computer laboratory for the 1987-1988 school year so classroom teachers in grades one through three are responsible for computer instruction.

The Parent Teacher Organization is strong and provides funds for updated equipment and learning resources. Parents and volunteers oversee several

fund-raising projects each year. For the past three years the school has received awards for having logged many hours of volunteer service. Most of the volunteers are parents or retirees from a nearby mobile home park.

The writer is a music teacher in the ninth year of teaching at the local school setting. During the first two years of teaching there was no set music education curriculum in the local district. Therefore, the writer developed music curriculum that reinforced basic skills (i.e. letter, word, shape, number recognition; vocabulary; social studies) and planned and presented holiday programs. Though school administrators and classroom teachers were supportive and satisfied with the music program, the music teacher believed students of such a young age could benefit from more intense music study. In 1981, the principal agreed to in-school ukulele lessons for a group of twelve first grade students. Two students chose baritone ukuleles and the remaining ten studied soprano ukuleles. Six of the students were already participating in the gifted program and

expressed interest in learning to play an instrument. The other six students were not participants in the gifted program, but were very successful in academic studies and showed enthusiasm for music.

The first year of ukulele study was considered successful by the administrators, parents and teachers because students were able to perform for school meetings and to maintain individual grade averages. The group was given the school name in possessive form followed by "Strummers". The group name seemed to mean that the school was proud to sponsor ukulele students and the students took pride in representing the school. The ukulele program continues with 66 members to date. The writer views the improvement of the music curriculum as successful in extending the music knowledge of individual students; however, the present curriculum was designed for general students and does not adequately serve the individual needs of gifted students. Each year gifted students ask for more advanced strums and chords but the writer has been unable to provide individualized instruction to gifted ukulele students. The results have been that

gifted students dropped out of the program, displayed an attitude of indifference, or created disturbances during class instruction. Over the past seven years, conferences have been held with the writer, the county gifted instructor, and parents of gifted students in an effort to develop individualized plans for advanced music study among gifted students. To date, no workable solution has been found. However, the focus of this practicum is to provide individualized instruction for gifted students through the use of computer-assisted instruction and independent study within the regular school schedule.

1.2 Problem Statement

Characteristics of gifted learners include the ability to process information faster than others. (See Appendix A) Although gifted students enjoy membership in class as evidenced by regular attendance and a willingness to help others understand playing techniques, these students accomplish chording and strumming techniques long before other class members and begin to lose patience with classmates and structured lessons. Working toward performances gives gifted students a new goal but this enthusiasm lasts only until the last song is played.

Presently, there are 34 students enrolled in Beginning Ukulele Class. Thirty-one students are enrolled in the second year of lessons and are members of the Advanced Ukulele Class. Five gifted students are enrolled in Beginning Ukulele. Two gifted students are enrolled in Advanced Ukulele.

Yearly contracts for participation in ukulele classes are made with students, parents, classroom

teachers, the music teacher, and principal. (See Appendix B) These contracts are kept on file throughout the career of the student in ukulele classes and serve as a reminder when the first breach of contract occurs. An update form is completed by classroom teachers once each six weeks and returned to the music teacher. (See Appendix C) When a problem is indicated, the music teacher and classroom teacher hold a conference with the student to restate terms of the contract. Notification of the problem and student conference is sent to the parent with a reply requested. This procedure has proved effective in most cases and the student is allowed to continue with ukulele instruction. In the event a student does not improve, a conference with the student, parent, classroom teacher, and music teacher is held to discuss temporary or full suspension from the ukulele program.

Gifted, Advanced Ukulele students have already surpassed the classmates. Individual playing tests were given October 8th and 13th, 1987. Gifted students completed the test the first day of testing and earned the highest possible scores. Other

students were reluctant to sign up for testing and the music teacher had to assign individual times. Only two of the other students played with as much enthusiasm as the gifted students and earned comparable grades.

Since Beginning Ukulele classes have just begun, there is no concrete evidence of gifted students becoming bored. However, class lessons are structured for the average learner since the average learner is in the majority.

In past years, frustrated gifted students displayed discontent by indifference, acting out, leaving classwork and homework unfinished, and threatening to quit coming to ukulele class.

In 1983, a group of concerned parents with children assigned to the new school and whose children no longer received ukulele instruction, approached the local school board. The parents requested that the writer teach the gifted children note reading and basic music theory after school one day a week. The superintendent decided that the local school district could not incur the cost of electricity and maintenance for a special class held on campus after

regular school hours. The decision of the superintendent did not deter the parents and the parents arranged group lessons taught by the writer in private homes. The home class was made up of six gifted students with two years of experience in ukulele. These gifted, primary students were already quite proficient in ukulele and eagerly learned note reading and began playing songs on the ukulele and piano by note rather than chording. These students experienced many other extracurricular activities and scheduling class was nearly impossible.

Based on the aforementioned data, it can be seen that gifted students are the minority in the ukulele program. Parents of the gifted students are in agreement that these students need additional music instruction and that the needs of gifted students are not being met within the school curriculum. In order to meet the needs of these students, provision for individualized instruction must be initiated.

Computer-assisted instruction in note reading could enable gifted students to expand music knowledge, creative skills, and performance skills. Students would be able to effectively meet the

objectives of this program within the school structure as each classroom is equipped with a Commodore 64 computer. Musical instruments available in the school could be utilized for practice at designated times throughout the week. Students selecting the ukulele as the primary instrument would have little difficulty preparing a recital piece since each student owns a ukulele.

1.3 Outcome Objectives

This practicum will address the needs of gifted primary students to develop music knowledge and performance skills through individualized instruction over a six-week period of time during the school session. It will include the following specific objectives:

1. The writer will develop computer-assisted instruction for gifted ukulele students in treble clef note reading during October 26, 1987 through November 18, 1987.
2. After completing computer-assisted instruction in treble clef note reading and two weeks of practice, 71 percent of the gifted, ukulele students will be able to play the melody of a song on an instrument available within the school setting (i.e. keyboard, ukulele, recorder).
3. After completing computer-assisted instruction and performance in class recital, 71 percent of the gifted students will achieve 80 percent

mastery of the objectives presented in the computer-assisted program as measured by a written posttest. (See Appendix D)

4. Following computer-assisted instruction and class recital performance, 71 percent of the gifted students involved in the project will evaluate the process as measured by a teacher-made evaluation. (See Appendix E)

Chapter II

Research and Solution Strategy

2.1 Information Collection Research

The use of computer-assisted instruction in music education for gifted, primary ukulele students is under utilized. This is evidenced by the lack of documented research. A combination of the following four specialized areas was researched:

1. Computer-Assisted Instruction
2. Music Education
3. Gifted Education
4. Primary Students

However, programs have been implemented in which two of the above specialized areas; computer-assisted instruction and music education, and gifted education and music education are combined.

Research in Computer Assisted Music Education

(Rene Upitis 1982) found the nine-voice, music editor ALF software for Apple microcomputers helpful in teaching some elements of music and composition.

Upitis concludes that computer-assisted music instruction provides meaningful musical experiences for children.

Logo, Apple II microcomputer software developed by Bamberger and Beckwith in 1972-1975 presents activities and games that require students to interact with the computer and affords them the opportunity to explore sound duration and intensity. Adding tutorials and visual enhancement, Lamb (1981) has developed similar investigations of sound and selected basic elements of music in his Musicland series for computer.

Broderbund Publishers distribute Bank Street Music Writer; software compatible with Commodore and Apple computers. Elementary students utilizing this software will be introduced to composing. This program is capable of producing musical sounds and will print and save compositons created by the student.

Research in Gifted Music Education

(The California State Department of Education 1977) developed a curriculum guide for teaching accademically gifted children music in grades one through six. The curriculum consists of the following components:

1. Introduction to music education for gifted children which includes music history, music literacy, and specialized music instruction for gifted students in elementary schools
2. Values intrinsic in music education
3. Identification of the characteristics and needs of gifted students and the possibility of increasing creative intelligence through music
4. Inclusion of such contemporary teaching methods as influenced by the Hungarian, Kodaly; the German, Orff; and the Japanese, Suzuki Approach to music education
5. The mechanics of developing a successful music education program for gifted,

elementary students (i.e. scheduling, teacher qualifications, groupings, facilities)

6. Recommended content of a viable program for educating gifted students in music

(Calvin Taylor 1963) has done extensive study in developing talents in exceptional children. His contention is that academic talent alone has too long been the focus of education. By acknowledging creativity, communication, forecasting, decision making, planning, drama, and performing arts as talents worthy of attention and subsequent development within the educational arena, approximately 90 percent of the students will achieve average and above status. Taylor's present belief is that only 50 percent of the students enrolled in educational institutions where academic talent is the only consideration will succeed in becoming average and above students.

(Martinson 1972) offers the writer support in his acknowledgment of gifted students functioning at a higher level than classmates and his concurring belief that gifted students are neglected in primary grades.

2.2 Solution Strategy

After reviewing the literature, the writer developed computer-assisted instruction which included the following components:

1. Identification of the music staff
2. Note reading on the treble clef from middle C to high A
3. Identification of ledger lines
4. Identification of the music alphabet
5. Word spelling using the music alphabet
6. A practice in decoding a message using the musical alphabet in combination with the English alphabet

Several weeks prior to beginning the project, the writer held conferences with each of the five classroom teachers whose gifted students would be participating in the project. The purpose of these conferences was to present the program and to request assistance from teachers in sending participants to scheduled meetings and scheduling time each day for students to use in-class computers. All of the teachers agreed to schedule 2:00-3:00 p.m. for participants to work with the computer-assisted

instruction in treble clef note reading. The teachers agreed to post the schedule developed by the writer. (See Appendix F) Classroom teachers found the project schedule to be convenient with individual classroom schedules.

The writer then met with the students for the orientation of this practicum. During the orientation, students received an outline of activities which included the following:

1. The date of the pretest
2. In class running of the computer program
3. Date for the selection of musical instruments and recital piece
4. Practice schedule
5. Details concerning practice diary
6. Details concerning performance
7. Date practice diary is due
8. Date of posttest

Following the orientation, the writer administered the pretest. An 80 percent score on the pretest would indicate prior note-reading knowledge. Students receiving a grade of 80 percent or higher would be interviewed by the writer to determine what

instruments the student has played. The writer would then suggest that the student select an alternate instrument. The pretest was graded by the writer of this practicum.

The same test given as the pretest was given as the posttest. Interpretation of a score of 80 percent on the posttest indicated that the components of the computer-assisted program had been mastered. If 80 percent was not scored on the posttest, additional instruction was made available to the student. Completion of additional instructional activities was required before the posttest was readministered.

The solution strategy for this practicum was based on the idea that primary gifted students could execute the computer program during class time because each classroom was equipped with a computer and classroom teachers had scheduled time for this activity.

After completing computer-assisted instruction, students selected a musical instrument and a recital piece. The students gave the name of the recital piece and the instrument of individual choice to the writer. Music books were provided by the writer.

The students practiced the chosen recital piece during the school session. A daily log of practice times and activities was required of each student. Then each student participated in a class recital. Finally, the posttest and process evaluation was given.

Chapter III

Methodology

At the beginning of September, the writer developed computer-assisted instruction activities to increase individual skills in treble clef note reading. The writer developed software for use with Commodore computers because Commodore computers are used in the majority of the local elementary schools in the county. This in itself posed immediate problems because the school district purchased Commodore computers of varying capabilities. Because of the lack of local availability of Commodore software, purchase of usable software had to be made from catalogs and service for Commodore computers was no longer available. Apple IIe, IBM, and Radio Shack computers were distributed among secondary schools in the county and Commodore computers were considered obsolete. A majority of elementary schools continued

with Commodores and limited software.

The writer sought the advice of experts in computer programming as well as researched programming manuals but none of the programming techniques needed by the writer was available. In an effort to produce graphics comparable with those used in video games, the writer experimented with many approaches to the solution of this programming problem. The avenues this writer pursued included use of the Koala pad, a small tablet connected to the computer that programmers draw on and transfer to computer memory. The writer was unsuccessful in producing satisfactory graphics using the Koala pad device. A second approach was using sprites, small movable graphics, but the sprites proved to be too small even when enlarged. Finally, the writer graphed displays and programmed the displays using BASIC PRINT statements. From October 26 to November 13, 1987, the writer developed a combination tutorial and drill and practice computer-assisted instruction program for note reading in the treble clef. Minor changes such as replacing INPUT statements which require two

keystrokes with GET statements requiring only one keystroke; better sequencing in tutorial sections; replacing time delays with continuing options for individual reading time needs; and limiting the amount of reading per screen display were made as suggested by teachers after testing the program. To help keep administration informed, a copy of the program was given to the local school principal. In addition, the primary resource teacher in the targeted school was interviewed and it was found that the program was appropriate for children in grades two and three.

The implementation plan consisted of a six-week block of independent study for the target group. During the implementation period, met with classroom teachers and other professionals within the school setting on a regular basis to achieve cooperation in the implementation of the project; and gathered student music books and materials to enhance the knowledge of students in instrumental performance techniques.

On the morning of November 11, 1987, the first meeting of the classroom teachers of the gifted, primary, ukulele students participating in the project

was held. At this meeting the teachers were given an outline of the implementation plan. (See Appendix F) The classroom teachers were enthusiastic about the project and were willing to post the schedule in the classroom. Later that day, an orientation meeting was held for the students. The writer discussed the project, distributed and explained the schedules, and asked students to decide whether to participate in the project. All seven students wanted to participate and expressed the desire to proceed.

The pretest was administered November 18, 1987. In addition, students were given blank journals and were asked to make entries each day during the project period of November 18, 1987 through December 17, 1987. The writer explained that entries should include the feelings of the student regarding tests, the computer program, evaluations, progress, and other thoughts relative to the music study experience. Students were told the computer-assisted instruction had been distributed to classroom teachers and time would be available for the students to begin working with the computer program the afternoon of November 18, 1987.

Participants met with the writer on November 25, 1987. At this time, the students selected individual instruments and recital pieces. The writer made music books available for students and demonstrated playing the ukulele bynote. Three of the participants chose the soprano ukulele as the primary instrument while the remaining four students selected the electronic keyboard.

On November 30, when the students met to practice recital selections, only one child was able to read treble clef notes. The computer-assisted instruction had successfully taught students the music alphabet, but had not given participants any practice in note recognition. By December 1, 1987, the writer had revised the computer-assisted instruction to include drill and practice in note recognition, branching between music alphabet and note recognition drills, and separate evaluations for each section. A computer was set up in the music room and the writer observed each participant using the revised program.

Students practiced recital selections before school or during the scheduled practice times between November 18 and December 16, 1987. By December 16,

1987, participants were ready to perform recital pieces in a private recital held in the music room. Following the recital, students completed the posttest and evaluation and handed in the individual journals.

Chapter IV

Results

Objective one stated that the writer would develop computer-assisted instruction for gifted, ukulele students in treble clef note reading during October 26, 1987 through November 18, 1987. During the time stated, the writer developed computer-assisted instruction in BASIC language for use with Commodore computers. The developed software consisted of a tutorial giving student users the letters of the music alphabet and clues to memorizing the names of lines and spaces of the treble clef. Ledger lines were also presented in the tutorial. The program continued with a drill and practice in recognizing words made up entirely of letters of the music alphabet. Satisfactory completion of this drill and practice allowed students to continue with a review of note-reading skills followed by a drill and practice in note recognition. The program was designed so that program users could control the speed of progression through the computer-assisted

instruction. Students having difficulty in the drill and practice sections were able to review only those tutorials necessary for review. Evaluations were printed on the screen at the end of each of the drill and practice sections. With the help of a high school student from another county, the writer was able to student-proof the computer-assisted instruction program. Documentation of the computer-assisted instruction, the program, and flowchart are included in Appendix G of this report.

During the week of November 3, 1987, the writer met with each of the five classroom teachers of the gifted student participants. Classroom teachers of targeted students welcomed implementation of the project because teachers plan supplemental learning experiences for gifted students during the end of the day time when average students are finishing up the day's work. During the holiday season, gifted students would be involved in a project and classroom teachers could give attention to other areas.

The teacher-made, written pretest (see Appendix D) was given November 18, 1987. One student scored 60 percent, three students scored 50 percent and the

remaining three students scored 40 percent. Comments made by students such as: "I can't wait to find out what `bag' and `car' have to do with music." were not only humorous to the writer but also indicated enthusiasm for beginning the project.

Each student kept a journal beginning November 18 and continuing through December 16, 1987. (See Appendix H) The journals included short comments about the computer-assisted instruction, problems encountered during the project, illustrations, and occasional questions to the writer. Students reportedly ran the computer program several times a day; some as many as ten times. Overall reaction to the computer-assisted program was that students enjoyed using the computer independently.

Students followed the practice schedule from November 30 through December 16, 1987. Parents drove some of the participants to school so that the students could practice from 8:00 to 8:30 a.m. The teacher serving as consultant only, observed students helping each other in preparation of student recital selections.

Objective two stated that after completing computer-assisted instruction in treble clef note reading and two weeks of practice, 71 percent of the gifted ukulele students would be able to play the melody of a song on an instrument available within the school setting. Seventy-one percent of the participants were able to play entire song selections. However, two of the students played only the chorus of "Jingle Bells". The application of note reading skills would, therefore, appear to be a 100-percent success.

Objective three stated that after completing computer-assisted instruction and performance in class recital, 71 percent of the gifted students would achieve 80 percent mastery of the objectives presented in the computer-assisted program as measured by a written posttest. (See Appendix D) Four students scored 90 percent and three students scored 80 percent on the posttest.

Objective four stated that following computer-assisted instruction and class recital performance, 71 percent of the gifted students involved in the project would evaluate the process as

measured by a teacher-made evaluation. (See Appendix E) The following table shows the results of the process evaluation.

STUDENT EVALUATION OF PROGRAM

	Number of Students Selecting AGREE	Number of Students Selecting DISAGREE
1. The computer program helped me learn to read notes.	7	0
2. The computer program was fun.	7	0
3. I would like to learn more about music from computers.	7	0
4. I would be interested in doing more music projects.	6	1
5. I would like to learn to play other songs.	7	0
6. I would like to play other instruments.	7	0
7. I would like to play in other recitals.	5	2
8. I would like to write my own songs.	2	5

COMMENTS: "I like playing songs on the uke, piano very much it is fun, and I want to learn more songs to play."

Originally, students were to play recital selections on December 16, 1987 and take the posttest and complete the evaluation December 17, 1987. However, students completed the project on the afternoon of December 16 and handed in student journals on that date.

Student evaluations and comments made by participants December 16, 1987, indicated that the project was successful, enjoyable, and gifted students need more extensive music study than that presently offered within the general music curriculum.

Chapter V

Recommendations

The writer recommends that the primary, gifted students be given the opportunity to increase individual music knowledge and to develop personal talents in music through independent study. Project participants may continue independent music study by completing the following suggested activities:

1. Select a variety of songs to be played on instruments available in the school setting.
2. Gain knowledge of melody as a basic element of music by working with the computer-assisted instruction program developed by the writer in 1983.
3. Research and report on musical instruments, composers, and other music related topics.
4. Create a song to go along with a social studies unit being taught in the classroom.

5. Become a composer and write a song.
6. Study directing patterns and direct the class in singing a song.

The identified gifted students not meeting the criteria for participation in the practicum project may be included in supplemental music experiences. The writer will encourage newcomers to the program to begin with the computer-assisted instruction in note reading.

A copy of the computer-assisted instruction in note reading and recommendations for its use will be sent to the county office for distribution among elementary music teachers throughout the local county school district. The melody software previously developed by the writer has been distributed among music educators in the county for the past four years. If response from music educators in the county warrants it, the writer will present the project during an inservice for music educators.

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APPENDIX A HANDOUT FROM: EDU 550

Some Learning Characteristics of Gifted Children

Characteristics	*Concommitant Problems*
Keen power of observation; naive receptivity; sense of the significant; willingness to examine the unusual.	1. Possible gullibility; social rejection; value system and its defense.
2. Power of abstraction, conceptualization, synthesis; interest in inductive learning and problem solving; pleasure in intellectual activity.	2. Occasional resistance to direction; rejection or omission of detail.
3. Interest in cause-effect relations, ability to see relationships; interest in applying concepts; love of truth.	3. Difficulty in accepting the illogical.
4. Liking for structure and order; liking for consistency, as in value systems, number systems, clocks, calendars.	4. Invention of own systems, sometimes conflicting.
5. Retentiveness.	5. Dislike for routine and drill; need for early mastery of foundation skills.
6. Verbal proficiency, large vocabulary; facility in expression; interest in reading; breadth of information in advanced areas.	6. Need for specialized reading vocabulary early; parent resistance to reading; escape into verbalism.
7. Questioning attitude, intellectual curiosity, inquisitive mind; intrinsic motivation.	7. Lack of early home or school stimulation.
8. Power of critical thinking; skepticism, evaluative testing; self-criticism and self-checking.	8. Critical attitude toward others; discouragement from self-criticism.
9. Creativeness and inventiveness; liking for new ways of doing things; interest in creating, brainstorming, free-wheeling	9. Rejection of the known, need to invent for oneself.
10. Power of concentration; intense attention that excludes all else; long attention span.	10. Resistance to interruption.
11. Persistent, goal-directed behavior.	11. Stubbornness.
12. Sensitivity, intuitiveness; empathy for others; need for emotional support and a sympathetic attitude; ego-involvement; need for courage.	12. Need for success and recognition; sensitivity to criticism; vulnerability to peer group rejection.
13. High energy, alertness, eagerness; periods of intense voluntary effort preceding invention.	13. Frustration with inactivity and absence of progress.
14. Independence in work and study; preference for individualized work; self-reliance; need for freedom of movement and action; need to live with loneliness.	14. Parent and peer group pressures and nonconformity; problems of rejection and rebellion.

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APPENDIX B

UKULELE CONTRACT

As a member of Ukulele Club, I _____ agree to:

1. Do all classwork carefully and on time.
2. Obey all school rules.
3. Show respect for my teachers, bus driver, and other school workers.
4. Be present and on time for ukulele practice.
5. Attend all special performances unless I am ill or have a family emergency. (In the event of either of the above occurences, parents should send a note.)

Signature of Classroom Teacher _____

I agree to send _____ to ukulele practice at the assigned time as long as his/her work is finished to my specifications.

I/We understand the privileges and responsibilities involved in my/our child's participation in the school's ukulele program.

_____ (PARENT)

_____ (PARENT)

Contract made with the above-signed

AND

_____ (MUSIC TEACHER)

_____ (PRINCIPAL)

DATE _____

APPENDIX C

UKULELE STUDENT UPDATE

_____ is enrolled in Advanced Ukulele. Please circle the appropriate response to the items below. If a negative response is given, I will talk with the child and his/her parent concerning the problem. You may wish to give me specifics if the parent has not already been notified of the problem or if you are unsure the parent has received notices.

CLASSWORK/HOMEWORK:	adequate	inadequate
BEHAVIOR:	appropriate	inappropriate

COMMENTS:

APPENDIX D

PRE-POST TEST

NAME_____

Directions: Circle the letter that best completes the following:

1. The five lines and four spaces tht music is written on is called a:

   a. phrase b. staff c. beat

2. Ledger lines are:

   a. short lines that let you know to sing or play above or below the treble clef

   b. lines that tell you to repeat a section

   c. lines that divide the staff

3. Staff lines are:

   a. counted from top to bottom

   b. counted from bottom to top

   c. counted either way

4. The name of the second space in the treble clef is:
   a. F b. D c. A

5. The third line of the treble clef is:

   a. B b. G c. F

6. The fifth line of the treble clef is:

   a. F b. A c. E

7. The fourth space of the treble clef is:
   a. D b. E c. C

8. Which of the following letters is not in the music alphabet?

   a. C B. I c. G

9. Which of the following words has a letter that is not in the music alphabet?

   a. cab b. car c. bag

10. What line of the staff does the treble clef wrap around?

    a. Line 3

    b. Line 5

    c. Line 2

APPENDIX E

STUDENT EVALUATION OF PROGRAM

NAME_____

Directions: Check the answer that best describes your feelings.

1. The computer program helped me learn to read notes.

   agree disagree

2. The computer program was fun.

   agree disagree

3. I would like to learn more about music from computers.

   agree disagree

4. I would be interested in doing more music projects.

   agree disagree

5. I would like to learn to play other songs.

   agree disagree

6. I would like to play other instruments.

   agree disagree

7. I would like to play in other recitals.

   agree disagree

8. I would like to write my own songs.

   agree disagree

APPENDIX F PROJECT OUTLINE

	MON	TUES	WEDS	THURS	FRI
NOV	NOVEMBER 9	10	11 1:00-2:00 Orientation Music Room	12	13
	16	17	18 1:00-2:00 Pretest	19 In-class running of computer program	20
	23 In-class running of computer program	24	1:00-2:00 25 Select song and instrument	26 **holiday - no school**	27
	30 PRACTICE: 8:00-8:30 12:55-1:20				
DEC	DECEMBER	PRACTICE: 1 8:00-8:30	PRACTICE: 2 8:00-8:30 1:00-2:00	PRACTICE: 3 8:00-8:30 1:30-2:00	PRACTICE: 4 8:00-8:30
	PRACTICE: 7 8:00-8:30 12:55-1:20	PRACTICE: 8 8:00-8:30	PRACTICE: 9 8:00-8:30 1:00-2:00	PRACTICE: 10 8:00-8:30 1:30-2:00	PRACTICE: 11 8:00-8:30
	PRACTICE: 14 8:00-8:30 12:55-1:20	PRACTICE: 15 8:00-8:30	PRACTICE: 16 8:00-8:30 1:00-2:00 Recital	1:00-2:00 17	18

APPENDIX G

DOCUMENTATION OF COMPUTER-ASSISTED INSTRUCTION
IN TREBLE CLEF NOTE READING

The following computer-assisted instruction in treble clef note reading was developed for use by primary, gifted students. The program consists of two tutorials, two sections of drill and practice in note reading skills, and evaluations of the user's progress. This software is compatible with Commodore 64 computers.

DIRECTIONS FOR OPERATING THE PROGRAM:

1. Place the disk in the disk drive.
2. Turn on the monitor, disk drive, and keyboard.
3. When the READY prompt appears on the screen, type: LOAD "TREBLE CLEF",8 and press the RETURN key.
4. Once the program is loaded into computer memory and the READY prompt reappears, type: RUN.

NOTICE: This program has been student-proofed. Pressing the RUN STOP key will not stop the program. Turn off the computer when finished running the program.

PROGRAM PRINTOUT

```
2 POKE 808,234: REM *DISABLES RUN STOP KEY*
5 REM**TITLE SCREEN**
10 PRINT"■■■
```

PROGRAM PRINTOUT

```
410 PRINT"■":PRINTTAB(13)"THE NAMES OF THE SPACES"
420 PRINTTAB(13)"SPELL ■FACE■."
430 PRINT"■■■■■■":PRINTTAB(10)"E"
440 PRINTTAB(10)"■C"
450 PRINTTAB(10)"■A"
460 PRINTTAB(10)"■F"
470 GOSUB6000
480 GOSUB7000
490 PRINT"■":PRINTTAB(13)"NOW, LET'S PUT IT ALL"
500 PRINTTAB(13)"TOGETHER!":FORX=1TO1000:NEXT
510 PRINTTAB(10)"■■■■■■■■■■■E":FORX=1TO300:NEXTX
520 PRINTTAB(10)"■■F":FORX=1TO300:NEXTX
530 PRINTTAB(10)"■■G":FORX=1TO300:NEXTX
540 PRINTTAB(10)"■■A":FORX=1TO300:NEXTX
550 PRINTTAB(10)"■■B":FORX=1TO300:NEXTX
560 PRINTTAB(10)"■■C":FORX=1TO300:NEXTX
570 PRINTTAB(10)"■■D":FORX=1TO300:NEXTX
580 PRINTTAB(10)"■■E":FORX=1TO300:NEXTX
590 PRINTTAB(10)"■■F":FORX=1TO300:NEXTX
600 PRINT"■■■■■■■■■■■■■";:PRINTTAB(13)"<--SEE, AFTER ■G■ THE"
610 PRINTTAB(17)"MUSIC ALPHABET"
620 PRINTTAB(17)"STARTS AGAIN ON ■A■"
630 PRINTTAB(17)"■THE TREBLE CLEF IS"
640 PRINTTAB(17)"ALSO CALLED ■G CLEF■"
650 GOSUB6000
660 GOSUB7000
670 PRINTTAB(10)"■■SHORT LINES CALLED ■LEDGER■"
680 PRINTTAB(10)"■LINES■ MAY BE ADDED ABOVE"
690 PRINTTAB(10)"AND BELOW THE STAFF."
700 PRINTTAB(9)"■■■■■■■●- MIDDLE C"
710 PRINTTAB(12)"■■●"
720 PRINTTAB(14)"■■●"
730 PRINTTAB(16)"■■●"
740 PRINTTAB(18)"■■●"
750 PRINTTAB(20)"■■●"
760 PRINTTAB(22)"■■●"
770 PRINTTAB(24)"■■●"
780 PRINTTAB(26)"■■●"
790 PRINTTAB(28)"■■●"
800 PRINTTAB(30)"■■●"
810 PRINTTAB(32)"■■●"
820 PRINTTAB(33)"■■●- A"
830 PRINT"■■■■■■■■■■■■■■■■"
835 REM*RESTORE CHAR COLOR/SPACE DOWN
```

PROGRAM PRINTOUT

```
840 GOSUB6000
850 PRINT"■SOME WORDS CAN BE SPELLED USING ONLY"
860 PRINT"THE MUSIC ALPHABET."
870 PRINT:PRINTTAB(5)"■EXAMPLE:■"
880 GOSUB7010
890 PRINT"5 ■■■■■■■■■■■■■■■■■■■■";:PRINTTAB(12)"●";:PRINTTAB(14)"■■●";:PRINTTAB(16)"
●";
900 PRINTTAB(22)"■■●";:PRINTTAB(24)"■●";:PRINTTAB(26)"■●";
910 PRINTTAB(30)"■■■—●—";:PRINTTAB(32)"■■■■●";:PRINTTAB(35)"■●"
920 PRINT"■■■■■■■■■■■■■■■■■■■■■■■■";:PRINTTAB(12)"E G G";
930 PRINTTAB(22)"B A G";:PRINTTAB(31)"C A B"
940 GOSUB6000
950 PRINT"■■■THINK ABOUT THE MUSIC ALPHABET."
960 PRINT:PRINT"AFTER EACH WORD THAT APPEARS IN A BOX."
970 PRINT"TYPE ■Y■ FOR YES IF THE WORD IS SPELLED"
980 PRINT"USING ONLY THE MUSIC ALPHABET."
990 PRINT:PRINT"TYPE ■N■ FOR NO IF THE WORD USES LETTERS"
1000 PRINT"THAT ARE NOT IN THE MUSIC ALPHABET."
1010 PRINT:PRINT:PRINTTAB(16)"■BAGGAGE■"
1020 GOSUB8000
1030 IF YN$="Y" THENPRINT:PRINTTAB(17)"GREAT!":C=C+1
1040 IF YN$="N"THENPRINT:PRINTTAB(17)"SORRY"
1050 GOSUB 6000
1060 PRINT"■■■■";:PRINTTAB(20)"■CAR■"
1070 GOSUB8000
1080 IF YN$="Y"THENPRINT:PRINTTAB(4)"■R■ IS NOT IN THE MUSIC ALPHABET"
1090 IFYN$="N"THENPRINT:PRINTTAB(19)"RIGHT!":C=C+1
1100 PRINT"■■";:PRINTTAB(20)"■BEAD■"
1110 GOSUB8000
1120 IFYN$="Y"THENPRINT:PRINTTAB(15)"YOU GOT IT!":C=C+1
1130 IFYN$="N"THENPRINT:PRINTTAB(15)"UNH-UNH-UNH"
1140 PRINT"■■";:PRINTTAB(20)"■AGE■"
1150 GOSUB8000
1160 IFYN$="Y"THENPRINT:PRINTTAB(8)"YOU KNOW A LOT FOR YOUR AGE!":C=C+1
1170 IFYN$="N"THENPRINT:PRINTTAB(15)"BETTER STUDY"
1180 GOSUB6000
1190 PRINT"■■■";:PRINTTAB(18)"■COTTAGE■"
1200 GOSUB8000
1210 IFYN$="Y"THENPRINT:PRINTTAB(18)"FOOLED YOU!"
1220 IFYN$="N"THENPRINT:PRINTTAB(19)"SUPER!":C=C+1
```

PROGRAM PRINTOUT

```
1230 PRINT:PRINT:PRINTTAB(21)"■BAD■"
1240 GOSUB8000
1250 IFYN$="Y"THENPRINT:PRINTTAB(14)"CAN'T FOOL YOU!":C=C+1
1260 IFYN$="N"THEN PRINT:PRINTTAB(8)"MUSIC ALPHABET: ABCDEFG"
1270 PRINT:PRINT:PRINTTAB(20)"■BADGE■"
1280 GOSUB8000
1290 IFYN$="Y"THENPRINT:PRINTTAB(12)"YOU DESERVE A BADGE!":C=C+1
1300 IFYN$="N"THENPRINT:PRINTTAB(20)"WRONG"
1310 GOSUB6000
1320 PRINT"■■■";:PRINTTAB(18)"■CAFE■"
1330 GOSUB8000
1340 IFYN$="Y"THENPRINTTAB(18)"RIGHT ON!":C=C+1
1350 IFYN$="N"THENPRINTTAB(18)"SORRY!"
1360 PRINT:PRINT:PRINTTAB(18)"■FADE■"
1370 GOSUB8000
1380 IFYN$="Y"THENPRINT:PRINTTAB(18)"GREAT!":C=C+1
1390 IFYN$="N"THENPRINT:PRINTTAB(18)"WRONG"
1400 PRINT:PRINT:PRINTTAB(18)"■BAT■"
1410 GOSUB8000
1420 IFYN$="Y"THENPRINT:PRINTTAB(8)"■T■ IS NOT IN THE MUSIC ALPHABET"
1430 IFYN$="N"THENPRINT:PRINTTAB(18)"SUPER!":C=C+1
1440 GOSUB6000
1445 REM**EVALUATION**
1450 IFC=>9THENGOTO1465
1455 IFC=>7THENGOTO1490
1460 IFC=<6THENGOTO1510
1465 PRINT"■■■■■YOU ANSWERED"C" OUT OF 10 CORRECTLY.":GOSUB7010
1470 PRINTTAB(13)"■■■WH-■■■■■■■T  -■■■■■■■■■■■■■■";
1480 PRINT"  MUSI - ■■■■■■■■■■■■■■I-■■■■■■■■■■■■■■N!":GOTO1540
1490 PRINT"■■■■■YOU ANSWERED"C" OUT OF 10 CORRECTLY."
1495 GOSUB7010
1500 PRINTTAB(13)"■■■-■■■■■■■■■■■■OO-■■■■■■■■  ■■JO-■■■■■■■■■■■■■■■■!
1505 GOTO1540
1510 PRINT"■■■■■■YOU ANSWERED"C" OUT OF 10 CORRECTLY."
1530 PRINTTAB(8)"YOU NEED MORE PRACTICE.":FORX=1TO4000:NEXT:RUN
1535 REM*BRANCH TO NOTE READING EXERCISES*
1540 GOSUB6000
1700 PRINT"■■■ IN CASE YOU DO NOT REMEMBER THE NAMES"
1710 PRINT" OF THE TREBLE CLEF LINES, MEMORIZE"
1720 PRINT" THIS PHRASE:"
1750 PRINT:PRINT:PRINTTAB(5)"■E■VERY ■G■OOD ■B■OY ■D■OES ■F■INE."
```

PROGRAM PRINTOUT

```
1760 PRINT:PRINT:PRINT:PRINT:GOSUB6000
1770 PRINT"■■■■THE SPACES OF THE TREBLE CLEF"
1780 PRINT"  SPELL FACE - REMEMBER THIS AND YOU "
1790 PRINT"  WILL HAVE A SMILE ON YOURS!"
1800 GOSUB6000
1810 PRINT"■■■■■TYPE IN THE ANSWER TO EACH OF THE"
1820 PRINT"■■■FOLLOWING QUESTIONS."
1830 PRINT:PRINT:PRINTTAB(3)"1.  WHAT IS THE THIRD LINE OF"
1835 PRINTTAB(7)"THE TREBLE CLEF?"
1840 GETA$:IFA$=""THEN1840
1845 IFA$="B"THENPRINTTAB(10)"■■B■OY, YOU'RE SMART!":Z=Z+1
1850 IFA$<>"B"THEN PRINT TAB(10)"■■THE ANSWER IS B■"
1860 PRINT:PRINTTAB(3)"2.  WHAT IS THE FIRST LINE OF"
1870 PRINTTAB(7)"THE TREBLE CLEF?"
1875 GETA$:IFA$=""THEN1875
1880 IFA$="E"THEN PRINTTAB(10)"■■E■XCELLENT!":Z=Z+1
1885 IFA$<>"E"THEN PRINT TAB(10)"■■THE ANSWER IS E■"
1890 PRINT:PRINTTAB(3)"3.  WHAT IS THE SECOND SPACE OF"
1900 PRINTTAB(7)"THE TREBLE CLEF?"
1920 GETA$:IFA$=""THEN1920
1930 IFA$="A"THEN PRINTTAB(10)"■■A■MAZINGLY BRIGHT!":Z=Z+1
1935 IFA$<>"A"THEN PRINTTAB(10)"■■THE ANSWER IS A■"
1938 PRINT:GOSUB6000
1940 PRINT"■■■":PRINTTAB(3)"4.  WHAT IS THE FIFTH LINE OF"
1945 PRINTTAB(7)"THE TREBLE CLEF?"
1950 GETA$:IFA$=""THEN1950
1960 IFA$="F"THEN PRINTTAB(10)"■■F■ANTASTIC!!!":Z=Z+1
1965 IFA$<>"F"THEN PRINTTAB(10)"■■THE ANSWER IS F■"
1970 PRINT:PRINTTAB(3)"5.  WHAT IS THE THIRD SPACE OF"
1975 PRINTTAB(7)"THE TREBLE CLEF?"
1980 GETA$:IFA$=""THEN1980
1985 IFA$="C"THEN PRINT TAB(10)"■■C■LEVER ONE!":Z=Z+1
1990 IFA$<>"C"THEN PRINT TAB(10)"■■THE ANSWER IS C■"
1995 PRINT:PRINTTAB(3)"6.  WHAT IS THE SECOND LINE OF"
2000 PRINTTAB(7)"THE TREBLE CLEF?"
2010 GETA$:IFA$=""THEN2010
2020 IFA$="G"THEN PRINTTAB(10)"■■G■REAT!":Z=Z+1
2025 IFA$<>"G"THEN PRINTTAB(10)"■■THE ANSWER IS G■"
2027 GOSUB6000
2030 PRINT"■■■■■7.  WHAT IS THE FOURTH SPACE OF"
2035 PRINTTAB(7)"THE TREBLE CLEF?"
2040 GETA$:IFA$=""THEN2040
2045 IFA$="E"THENPRINTTAB(10)"■■E■XACTLY RIGHT!":Z=Z+1
2050 IFA$<>"E"THENPRINTTAB(10)"■■THE ANSWER IS E■"
2055 PRINT:PRINTTAB(3)"8.  WHAT IS THE FIRST SPACE OF"
2060 PRINTTAB(7)"THE TREBLE CLEF?"
```

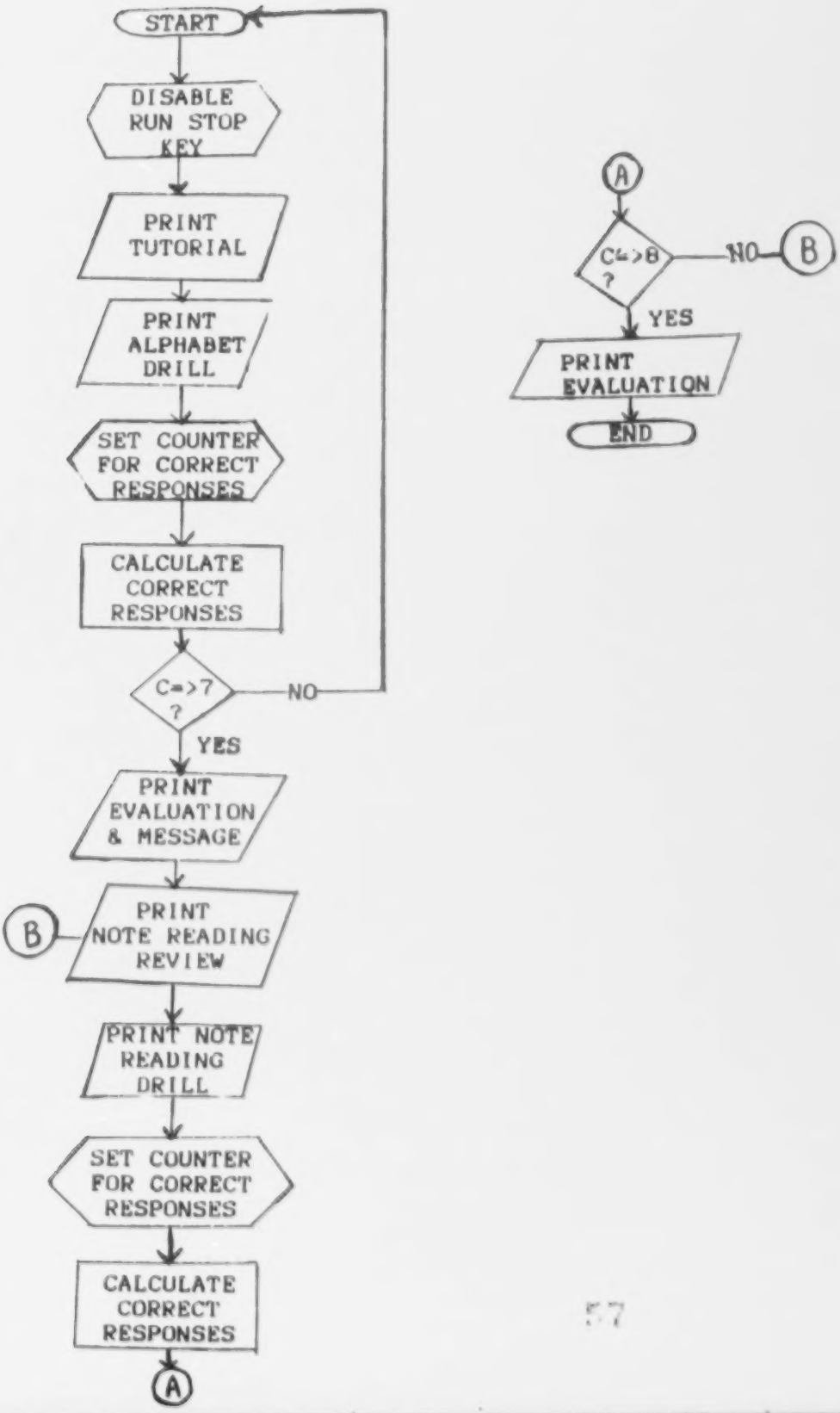
PROGRAM PRINTOUT

```
2065 GETA$:IFA$=""THEN2065
2070 IFA$="F"THEN PRINTTAB(10)"■■F■INE MUSICIAN!":Z=Z+1
2075 IFA$<>"F"THEN PRINTTAB(10)"■■F■ IS THE ANSWER"
2080 PRINT:PRINTTAB(3)"9.  WHAT IS THE FOURTH LINE OF"
2085 PRINTTAB(7)"THE TREBLE CLEF?"
2090 GETA$:IFA$=""THEN2090
2095 IFA$="D"THEN PRINTTAB(10)"■■D■Y-NO-MITE!!!":Z=Z+1
3000 IFA$<>"D"THEN PRINT TAB(10)"■■D■ IS THE RIGHT ANSWER"
3010 GOSUB6000
3020 PRINT"■■■   YOU ANSWERED"Z"OUT OF NINE RIGHT."
3030 IFZ=>8THEN PRINT:PRINT:PRINTTAB(5)"CONGRATULATIONS!":GOSUB8050
3038 IFZ<=7THENPRINT:PRINT:PRINT"■■■PRESS ■R■ TO REVIEW."
3050 GETA$:IFA$=""THEN3050
3060 RUN1700
5000 END
5999 REM**DELAY FOR CONTINUING**
6000 FORX=1TO200:NEXTX
6010 PRINT"■■":PRINTTAB(10)"PRESS ■C■ TO CONTINUE"
6020 GETA$:IFA$=""THEN6020
6030 IFA$<>"C"THEN6020
6040 RETURN
6999 REM**TREBLE CLEF ROUTINE**
7000 PRINT"■"
7010 PRINT"■":PRINT TAB(5)"X"
7020 PRINTTAB(5)"XX"
7030 PRINTTAB(5)"X X"
7040 PRINT"─────XX──────────────────────────────────────"
7050 PRINTTAB(4)"XX"
7060 PRINT"───X─X──────────────────────────────────────"
7070 PRINTTAB(2)"X  X"
7080 PRINT"─X───X──────────────────────────────────────"
7090 PRINT" X  XXXX
7100 PRINT"─X─X─X──X──────────────────────────────────"
7110 PRINT" X   X  X"
7120 PRINT"──XXXXXX────────────────────────────────────"
7130 PRINTTAB(5)"X"
7150 PRINTTAB(3)"X X"
7160 PRINTTAB(3)"X X"
7170 PRINTTAB(4)"X"
7180 PRINT"■"
7190 RETURN
7999 REM**USER RESPONSE PROMPT/CHECK**
8000 PRINT"TYPE ■Y■ OR ■N■:"
8010 GETYN$:IFYN$<>"N"ANDYN$<>"Y"THEN8010
8020 RETURN
```

PROGRAM PRINTOUT

```
8050 REM*INSTRUCTIONS FOR ENDING PROGRAM*
8080 PRINT:PRINTTAB(5)"YOU UNDERSTAND NOTE READING"
8085 PRINTTAB(5)"IN THE TREBLE CLEF."
8090 PRINT:PRINT:PRINTTAB(5)"PRESS R AND LET SOMEONE ELSE"
8095 PRINTTAB(5)"RUN THE PROGRAM."
9000 GETA$:IFA$=""THEN 9000
9010 IFA$="R"THEN RUN
9020 IFA$<>"R"THEN RUN
9030 RETURN
```

FLOWCHART


START
DISABLE RUN STOP KEY
PRINT TUTORIAL
PRINT ALPHABET DRILL
SET COUNTER FOR CORRECT RESPONSES
CALCULATE CORRECT RESPONSES
C=>7 ?
NO
YES
PRINT EVALUATION & MESSAGE
B
PRINT NOTE READING REVIEW
PRINT NOTE READING DRILL
SET COUNTER FOR CORRECT RESPONSES
CALCULATE CORRECT RESPONSES
A
A
C<>8 ?
NO
B
YES
PRINT EVALUATION
END

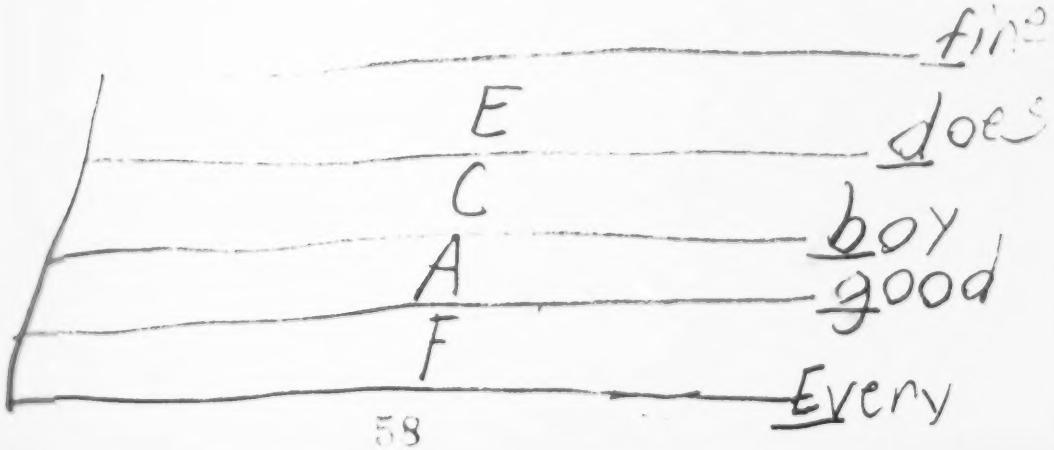
APPENDIX H EXCERPTS FROM STUDENT JOURNALS

11-18-87

Today I went for my pretest I thought it was hard. But I managed. I guess it was okay at least I'll live through it.

12-2-87

Today I've got to go to music at 10,'20. And I've learned how to read the notes on the Staff. I learned this way



APPENDIX H (continued)

EXCERPTS FROM STUDENT JOURNALS

11-27-1987

it's almost time to go to pe so I better hurry the prog is getting kinda boring.

12-8-1987

Today I got to run the program it's long and hard.

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APPENDIX H (continued)

EXCERPTS FROM STUDENT JOURNALS

11-18-87

The posttest was on Wednesday. You did not have to get any write. You werint sopost to know nothing on this test I hope I get some write. I want to learn how to play a key board.